SRINIVAS GROUP
SAMAGRA GNANA
ESTD: 1988

Auto Thrust

When we thrust, we leave everyone in dust.....

March 2018

Srinivas Institute of Technology, Mangaluru
Department of Automobile Engineering

Volume 2, Issue 3

NEBULA

H.O.D'S MESSAGE

I am happy to see the 2nd volume of this academic year's e news letter AUTO THRUST on time. The department had full of activities, many of them were self supporting and successful. Students were very much involved in industry internship and industrial visits. I am sure this will definitely improve their confidence and take them towards next level. At the same time , students represented sports at regional and university level and came out with flying colours.

I congratulate the SAE team for their wonderful achievement and accomplishment at National level, in their first attempt itself. Odd semester results are really encouraging and is a testimony in itself about the around performance.

Let us all work together and take the department to the next level.

Dr. Ramakrishna N. Hegde

*** For Internal circulation only

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Imagination is more important than Knowledge

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Inside this issue:

Kiekert unveils automatic-door tech for autonomous vehicles

A new electronic side door latch is the prelude to vehicle side doors that automatically open and close on command.

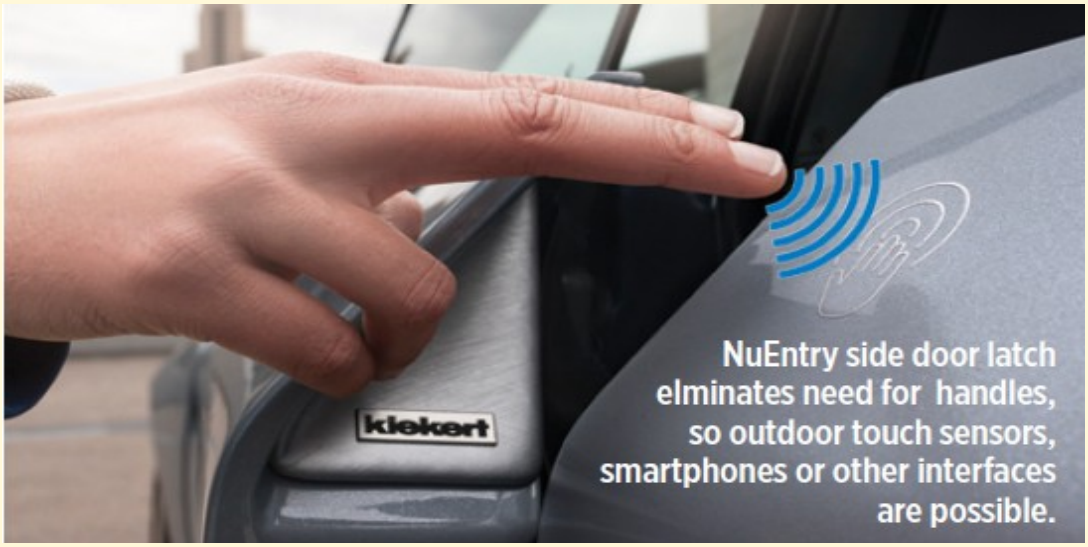
"Our endgame is about providing a system in which the side doors automatically open when an autonomously-driven car arrives for passengers," said Hector Verde, Director of Product Development for the Americas at Kiekert. Those doors would also close automatically after the occupants are in the vehicle. All this could happen with just the push of a button or sensor recognition, he added.

Kiekert recently unveiled its NuEntry latch which uses two actuation chains, with a pawl that lifts via an electric motor. The latch is always mechanically locked. Under normal operating conditions, the latch is released electronically. If the power supply is lost due to a vehicle crash or other incident, the latch mechanically unlocks.

This temporary crash redundancy means the e-latch system doesn't require a dedicated power storage unit or standalone electronics, Verde told *Automotive Engineering*.

Pairing NuEntry with Kiekert's i-move (an electrical actuator system currently under development) and i-protect (a sensor based system to control the door movement) is part of a three prong technology strategy being launched by the company.

"When we integrate NuEntry with i-move, that allows the side door to unlatch, open to a specific door-check position, and close automatically," explained Verde. "When you add-in the i-protect system, the door is prevented from opening, or it automatically stops moving, if a pole, pedestrian, bicyclist, or other obstacle is detected by sensors."



Kiekert plans to retrofit its NuEntry, i-move and i-protect systems on demonstration vehicles in 2018. "We have a concept demonstration vehicle in Europe, but in a few months we'll also have concept demonstration vehicles in North America and other regions," said Mike Hietbrink, Global Sales Director and General Manager of Kiekert USA.

Source: SAE INDIA

Short Introduction of Andra pradesh state

Statehood
1 November 1956
Capital city
Hyderabad, Amaravati*
Largest city
Visakhapatnam
Districts - 13
Government Body
Government of Andhra Pradesh
Governor
E. S. L. Narasimhan
Chief Minister
N. Chandrababu Naidu(TDP)
Legislature
Bicameral (175 + 58 seats)
Lok sabha constituencies
25
High Court
High Court of Judicature at Hyderabad
Area Total
162,970 km^2(62,920 sq mi)
Area rank - 8th
Population Total (2011)
49,386,799
Rank - 10th
Density
308/km^2 (800/sq mi)
Demonym(s)
Telugu / Andhraite
Emblem
Poorna kumbham
Language
Telugu
Song
Maa Telugu Thalliki
Dance
Kuchipudi

Magna's new active airdam boosts 2019 Ram fuel efficiency

For the all-new 2019 Ram 1500 pickup, FCA engineers again surprised their industry competitors with an impressive array of integrated technologies aimed at improving the pickup's fuel efficiency. The list of segment 'firsts' includes 48-V hybridization, a heated/cooled rear drive axle and an active front airdam to optimize the truck's aerodynamics.

2019 Ram 1500 shows active airdam deployed. The collaboration with Magna included development of validation requirements including bench testing.

Developed in collaboration with Magna International (which also designed the Ram's active grille shutters), the new active airdam is designed to deploy at 35 mph (56 km/h) and retract at 15 mph (24 km/h). It is responsible for 40% of the new pickup's total 9% aerodynamic improvement over the outgoing model, noted Mike Raymond, the Ram's chief engineer.

"We got a few [aero] counts out of the new cab's roof design and the taller tailgate, but the active airdam really brought us significant gains in both Cd and Cd(A), which is big for our highway fuel-economy numbers," he told *Automotive Engineering*. Improving Ram's Cd from 0.393 in 2018 to 0.357 in 2019 represents a 36-counts drag reduction—worth 1 mpg in highway operation, Raymond said.

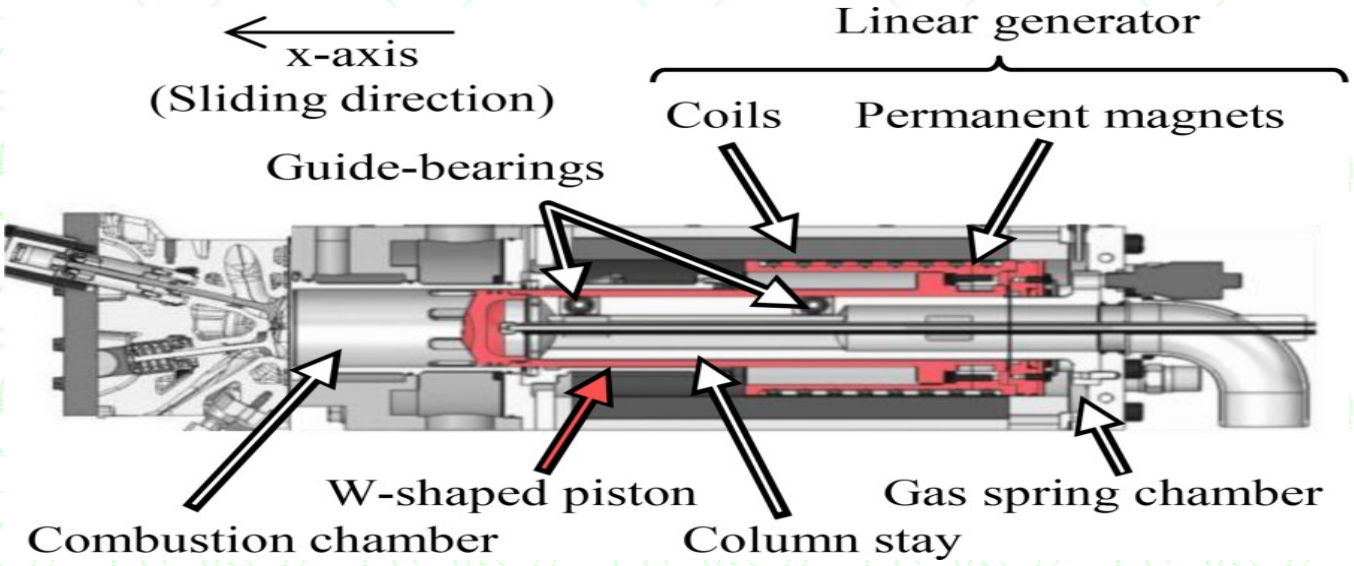
Active aerodynamic systems qualify for the "off-cycle" credits that automakers can earn in their federal fleet fuel efficiency compliance. The current U.S. CAFE rules require average pickup truck economy to increase from 29.6 mpg in 2018 to 39.3 mpg by 2025.

Source: SAE INDIA

Free - Piston Linear Generator

The Free-Piston Linear Generator (FPLG), is a free-piston engine coupled with a linear alternator. It converts chemical energy from fuel into electric energy. Because of its versatility, low weight and good efficiency, it can be used in a wide range of applications, although it is of special interest to the mobility industry as range extenders for electric vehicles.

The free-piston engine linear generators can be divided in 3 subsystems:



- One (or more) combustion chamber with a single or two opposite pistons
- One (or more) linear electric generator, which is composed of a static part (the stator) and a moving part (the magnets) connected to the connection rod.

Operation

The free-piston linear generator generally consists of three subsystems: combustion chamber, linear generator and return unit (normally a gas spring), which are coupled through a connecting rod.

In the combustion chamber, a mixture of fuel and air is ignited, increasing the pressure and forcing the moving parts (connection rod, linear generator and pistons) in the direction of the gas spring. The gas spring is compressed, and, while the piston is near the bottom dead center (BDC), fresh air and fuel are injected into the combustion chamber, expelling the exhaust gases.

The gas spring pushes the moving parts assembly back to the top dead center (TDC), compressing the mixture of air and fuel that was injected and the cycle repeats. This works in a similar manner to the two-stroke engine, however it is not the only possible configuration.

Vikesh

6th sem Automobile Engg

SIT Mangaluru

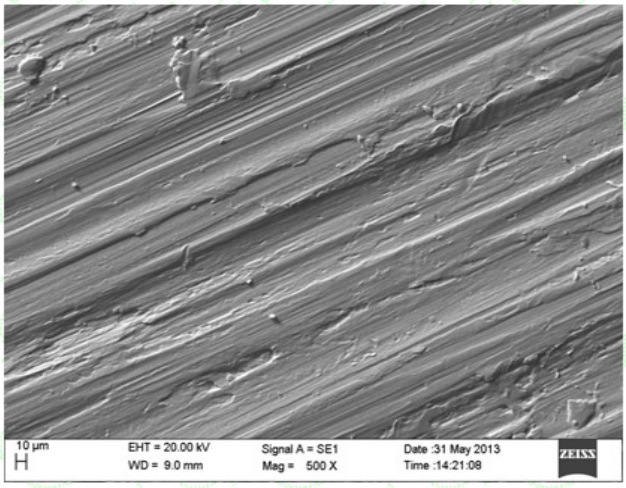
Effect of heat Treatment on microstructure of Duplex Stainless Steel

Duplex stainless steels are called "duplex" because they have a two-phase microstructure consisting of grains of ferritic and austenitic stainless steel. When duplex stainless steel is melted then it solidifies from the liquid phase to a completely ferritic structure. As the material cools to room temperature, about half of the ferritic grains transform to austenitic grains. The result is a microstructure of roughly 50% austenite and 50% ferrite.

The steel has many practical applications in every aspects of life. Steel with favourable properties are the best among the goods. The steel is being divided as low carbon steel, high carbon steel, medium carbon steel on the basis of carbon content. The process of heat treatment is carried out first by heating the metal and then cooling it in water, air, and oil. The purpose of heat treatment is to soften the metal, to change the grain size, to modify the structure of the material and relive the stress set up in the material. The various heat treatment processes are annealing, normalizing, hardening and tempering.

The effect of heat treatment on the embrittlement of a AISI 316L and AISI 2507 duplex stainless steel has been investigated. Ageing at 475°C for 1hour and sub zero cooling at - 10°C for 24h. The micro structural changes in AISI 316L and AISI 2507 duplex stainless steel has been investigated systematically.

The microstructure, hardness and tribological behavior of the as cast and different heat treatment specimens were measured. Microstructure analysis is carried out before and after wear test with the help of Photo images, Scanning Electron Microscope (SEM) and Energy Dispersive X-Ray Spctroscopy (EDX).



Mr. Ramaswamy M P
Asst. Professor
Department of Automobile Engineering
SIT Mangsluru

Snap shots

March 1. Sports Day

Industrial Visit to KSRTC workshop Bengaluru by 4th sem Students

Envision 2K18

SAE Baja 2018

KARIZMA ZMR

Type	Air cooled, 4- stroke single cylinder OHC, Fuel Injection, Oil Cooler
Displacement	223 cc
Max. Power	14.9 kW (20 BHP) @ 8000 rpm
Max. Torque	19.7 N m @ 6500 rpm
Max. Speed	129 kmph
Bore x Stroke	65.5 x 66.2 mm
Compression Ratio	9.6:1
Starting	Self Start
Ignition	DC- FTIS (Full Transisterized Ignition System
Oil Grade	SAE 10 W 30 SJ Grade (JASO MA Grade)
Air Filtration	Viscous, Paper Pleated Type
Fuel System	Gasoline Fuel Injection System
Fuel Metering	FI, Fuel Injection

MAESTRO EDGE

Type	Air - Cooled, 4 - Stroke Single Cylinder OHC
Displacement	110.9 cc
Max. Power	6 kW (8 BHP) @ 7500 Revolutions Per Minute (RPM)
Max. Torque	8.7 Nm @ 5500 Revolutions Per Minute (RPM)
Starting	Self-Start
Length	1841 mm
Width	695 mm
Height	1190 mm
Wheelbase	1261 mm
Ground Clearance	155 mm
Kerb Weight	110 Kg
Max Payload	130 Kg

Hyundai Elite i20

Engine Type:	Kappa VTVT Petrol Engine
Engine Displacement:	1197 cc
Fuel Type:	Petrol
Power:	81.86bhp@6000rpm
Torque:	114.73nm@4000rpm
No Of Cylinders:	4
Transmission:	Manual
Gear Box:	5 Speed
Drive Type:	FWD
Paddle Shift:	N
Kerb Weight:	1066kg
Suspension Front:	McPherson Strut with Coil Spring
Suspension Rear:	Coupled Torsion Beam Axle with Coil Spring
Brakes Front:	Disc
Brakes Rear:	Drum
Steering Type:	Power

Tata Nexon 1.2 Revotron XE

Mileage:	17 kmpl
Engine Displ.:	1198 cc
Airbags:	Driver and Passenger
ABS:	Y
Central Locking:	N
Engine Type:	Revotron 1.2L Turbocharged
Fuel Type:	Petrol
Power:	108.5bhp@5000rpm
Torque:	170Nm@1750-4000rpm
No Of Cylinders:	3
Transmission:	Manual
Gear Box:	6 Speed
Drive Type:	FWD
Kerb Weight:	1237Kg

GRADUATION DAY & FOUNDERS DAY

For feed back - +918951225467 (Prakash ST), +919538445565 (Amit Kumar H) prakash0435@gmail.com, Amitkumar.h3@gmail.com